How a leading tin producer leverages blockchain tech to track responsibly sourced tin.

LuNa Smelter + Minespider: A case study

LuNa Smelter

MINESPIDER

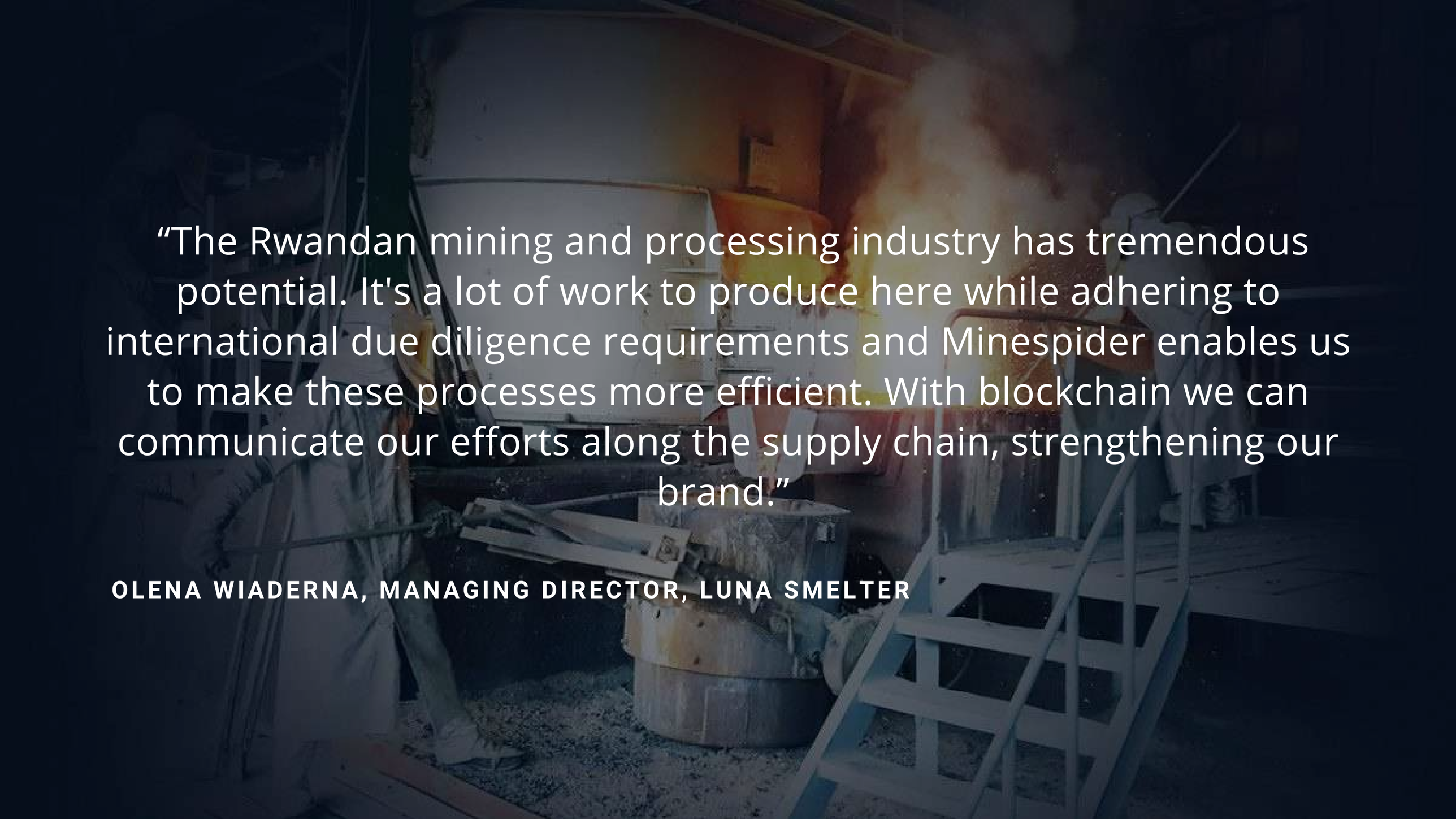
INTRODUCTION

To date, LuNa Smelter has tracked the shipment of about 250 tonnes of tin using Minespider’s blockchain technology. This case study explores how Minespeder’s blockchain tech “OreSource” helped LuNa Smelter streamline compliance, the key outcomes for LuNa and the learnings Minespider takes from the whole project.

LuNa Smelter: Responsible Tin from Rwanda

LuNa is a leading tin producer located in Kigali, Rwanda, and the only tin smelter in East Africa which completed an assessment for the Responsible Minerals Assurance Process (RMAP), the flagship program of the Responsible Minerals Initiative (RMI). LuNa Smelter is also fully conformant with the requirements of the OECD Due Diligence Guidance for Responsible Supply Chain of Minerals as well as meeting the demands of the mineral certification scheme of the International Conference on the Great Lakes Region (ICGLR).

LuNa Smelter operates vertically integrated operations comprising exploration assets, through cassiterite production sites, a beneficiation plant and a modern smelting facility. Additionally, the company is cooperating with local cassiterite suppliers.



“The Rwandan mining and processing industry has tremendous potential. It's a lot of work to produce here while adhering to international due diligence requirements and Minespider enables us to make these processes more efficient. With blockchain we can communicate our efforts along the supply chain, strengthening our brand.”

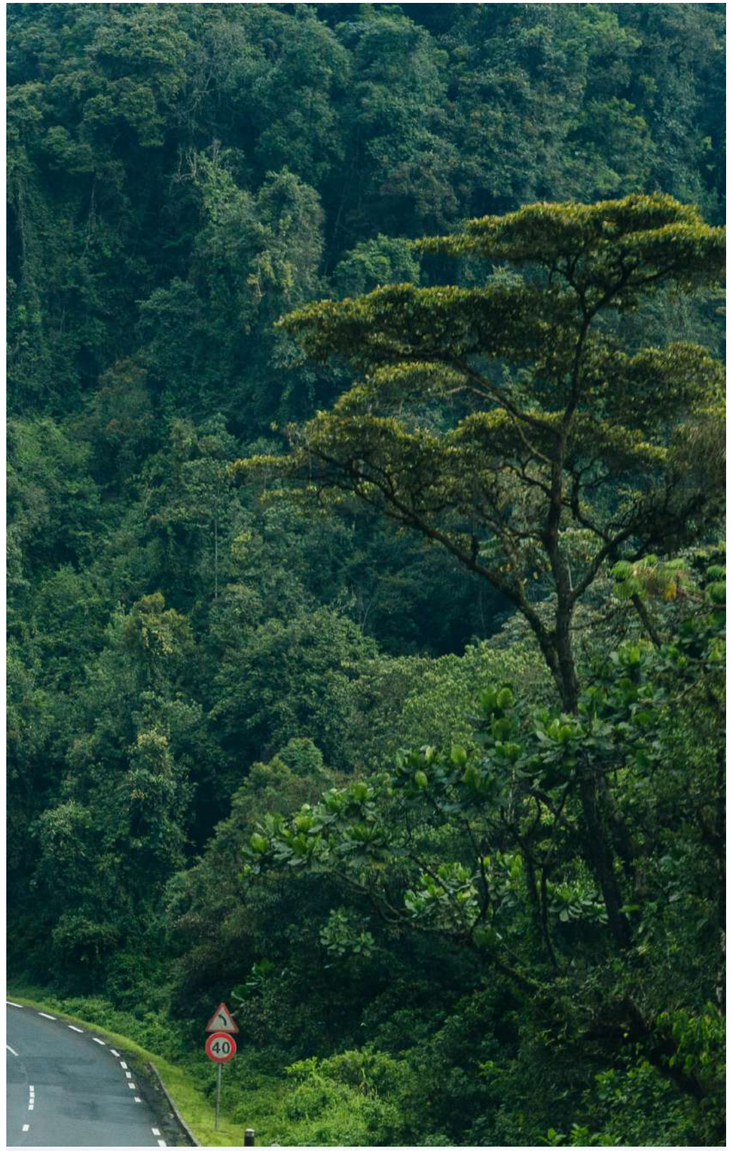
OLENA WIADERNA, MANAGING DIRECTOR, LUNA SMELTER

The challenges of operating in Africa

Naturally, mounting and maintaining such an operation that is both responsible and profitable in Central Africa is a challenging endeavor - which is why many companies prefer to simply export the cassiterite concentrate to other countries with established smelting facilities, leaving less value added in the country. On the global commodities market however, customers cannot possibly know where and how their tin was sourced, processed, and cast. That’s why LuNa Smelter developed the plan to use blockchain technology in order to attach information directly to tin shipments, time-stamped and tamper-proof.

Firstly, this helps to highlight the responsible provenance and exemplary practices of the smelter. Secondly, it allows LuNa to provide their customers with the necessary import and export documentation, information for supply chain audits, and any other data. Together this data package, attached to the tin through QR codes, and transmitted digitally via Minespider's software, enhances the value of the product itself. It also distinguishes LuNa Smelter as a leading responsible producer in the Great Lakes Region, and more broadly, in Central Africa.

Rwanda: Located in Central Africa, The Republic of Rwanda is a major supplier of cassiterite, wolframite, gold, and coltan, among others. Rwanda itself is a stable country with no conflict in its borders, and is not considered conflict affected or high risk by the European Union’s indicative list of countries qualified as CAHRAs. Because of its vicinity to the Democratic Republic of the Congo, it is considered a CAHRA in other frameworks, most importantly the US’ Dodd-Frank Act. Rwanda has made it a priority to protect its biodiversity - a third of the country is covered in forest and is home to the world's largest population of the endangered mountain gorillas. Moreover, agriculture is a significant economic factor. As a consequence, any mining activity has to be conducted as responsibly as possible, in order to preserve natural resources. There are extensive regulations in place to protect these resources and compliance with them is overseen by the Rwandan Mining, Petroleum, and Gas Board.



The EIT Grant & the EU Conflict Minerals Regulation

On January 1st, 2021, the EU Conflict Minerals Regulation (EU 2017/821) came into effect. The regulation requires EU importers of Tantalum, Tungsten, Tin, and Gold (3TGs) to conduct due diligence in accordance with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (CAHRAs), in order to avoid contributing directly or indirectly to conflict in their supply chains. To date, there are no tools available that provide an immutable record documenting a shipment of minerals from a mine along a mineral supply chain to a smelter or refinery and ultimately the end-manufacturer, while providing CAHRA-related documentation. This is why Minespider, in July 2020, started developing “OreSource, a software tool built on Minespider’s existing blockchain infrastructure that allows users to share and review material data. At the same time, it can communicate location, transportation, quantity, and additional information downstream with shipments of their products. This is done via a template, with questions for LuNa and their suppliers that are tailored to the requirements of the regulation. New templates can be added as the European Union or other regulatory bodies recognize additional government or industry association standards. The development of this product was supported by a grant from the Raw Materials Chapter of the European Institution of Innovation and Technology (EIT).

Partnerships that drive change

Minespider has a history of successfully working in industry consortia and integrating a variety of perspectives to projects. Here, too, Minespider and LuNa worked together with a number of other stakeholders to ensure the best outcome of the project: The Rwandan Mines, Petroleum, and Gas Board (RMB) was interested and engaged from day one, in order to ensure full buy-in from Rwandese authorities for a potential wider roll-out. The Responsible Minerals Initiative (RMI) as the world's biggest industry association for responsible mineral sourcing, and sponsor of the RMAP Assessment was included to ensure alignment with international standards. Google, a long-term partner of Minespider, participated in order to provide experience and insight on the downstream manufacturing perspectives. Together we issued a joint press release announcing the LuNa-Minespider Partnership.

Implementing the software onsite

Minespider personnel spent a total of nine weeks in Rwanda in order to learn from LuNa Smelter's team, visit mine sites, refine and adapt the software, and onboard relevant personnel on its use.

LuNa Smelter thus took the following preparatory steps: Firstly, LuNa's team identified which information would go on which data layer (private - transparent - public). The Minespider blockchain creates digital certificates that separate data into three different layers, depending on whether the data should be publicly visible, transparent between members of the same supply chain, or private between a company and their customer. This was key to ensuring they didn't reveal information that would be considered confidential by either the sender or recipient of a shipment. Secondly, the data template for the EU Conflict Minerals Regulation was filled out.

After those preliminary steps, LuNa's team started using the software for the actual shipments. For this, a certificate was created for each batch, including information about date, weight, and recipient, as well as the necessary documentation in the previously agreed-upon data layers. After that, a QR code linking to the information could be printed and attached to the shipment. In this pilot, at least one QR code was attached to every bundle of tin ingots in a shipment. Five of the six shipments of tin leaving LuNa Smelter in December were equipped with Minespider QR codes. And since then, all shipments that have left the Smelter are equipped with QR codes linking to blockchain-based shipment certificates.

Key outcomes for LuNa Smelter

01

Digitized processes.

Using Minespider’s blockchain platform, LuNa Smelter is transitioning to adopting more digital processes in their due diligence reporting. Data is now digitally linked to the physical shipment, reducing the amount of paperwork needed.

02

Streamlined compliance.

LuNa implemented the OreSource template into their traceability department, ensuring that every shipment now carries a QR code with the correct data needed to comply with regulatory requirements, such as the EU Conflict Minerals Regulation.

03

Strengthened brand image

By employing blockchain to trace responsibly sourced tin, LuNa is becoming a trail-blazer as the commodities market is driving towards ever more transparency and sustainable sourcing becomes a decisive factor.

04

Improved client partnerships

Their downstream client wanted to learn more about traceability and joined the Minespider system. They now know how to access key data on LuNa's shipments via the blockchain platform.

Tools for future implementation

As a result of the project implementation and the relationships established in the region, Minespider has developed the following tools. These can support further traceability projects in Central Africa and beyond.

List of risk indices and metrics

Minespider elaborated a list of risk indices and metrics that - at the request of current and future partners and customers - can be integrated into the software to trigger risk alerts.

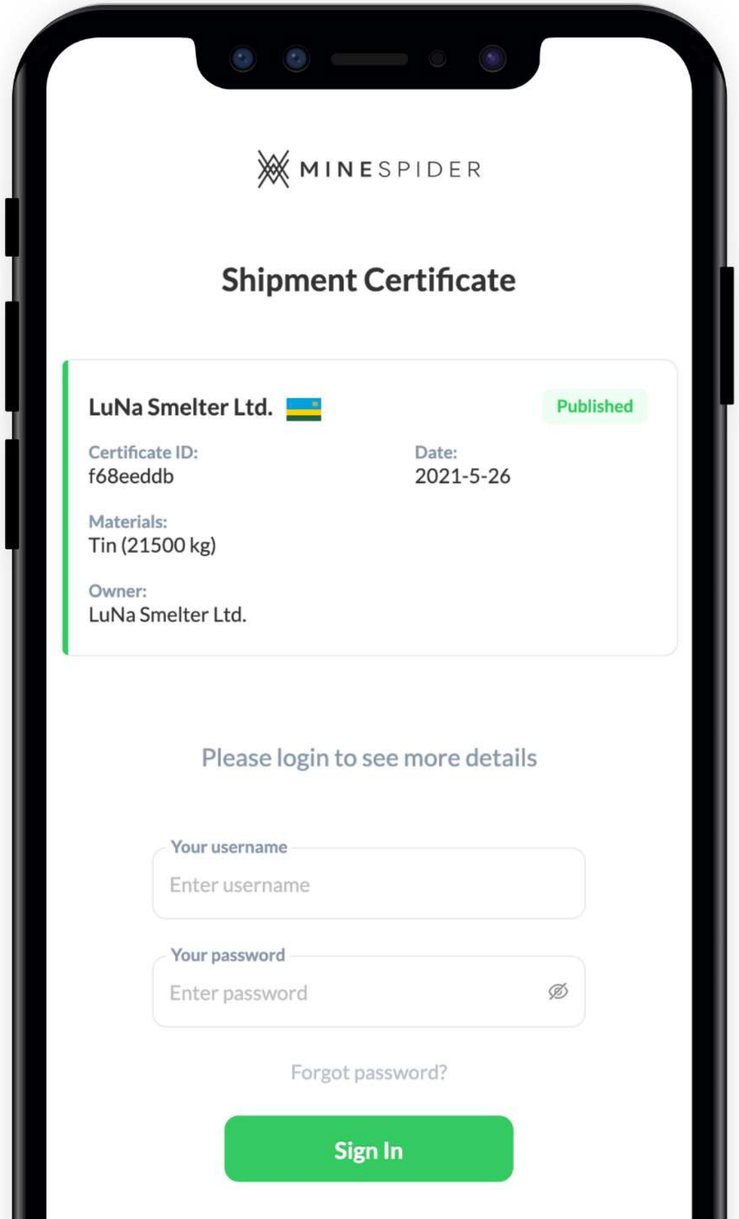
Template for EU Conflict Minerals Regulation

Minespider developed a template tailored to the EU Conflict Minerals Regulation. With this, companies exporting 3TGs to the European Union will be asked for the information their customers will have to provide to authorities and deliver that data with the shipment. Recipients can analyse the data and know where to ask for further information if needed.

Templates for other Contexts

In the course of the project, Minespider drafted other data templates for different contexts, among them for an operation’s ICGLR status, or for ISO certifications. In principle, Minespider can work with any customer to create customized data templates for their reporting needs.

The software, with the mentioned functionalities was commissioned with LuNa Smelter and continues to be actively used there. Since the inception, about 250 tonnes of tin (about 10,000 ingots) have been traced on the blockchain platform. Both LuNa Smelter and Minespider see this as the beginning of a long-term relationship to leverage the use of blockchain technology to foster and promote responsible sourcing, in Rwanda and elsewhere.



About Minespider

Minespider connects companies in a supply chain, empowering them to collect, request and communicate important data using blockchain technology. This offers mineral producers the chance to distinguish their products from the rest of the market - by showing provenance and sharing due diligence and carbon emissions data securely.

The OreSource solution gives miners and smelters the means to easily capture and communicate due diligence data that traders and importers need to comply with the EU Conflict Mineral Regulation.

Minespider partners with mineral producers such as Minsur, which produces around 6% of the world's tin from their San Rafael mine in Peru, to LuNa Smelter in Rwanda, the leading responsible tin producer in the Great Lakes Region.

Join leading responsible producers driving change at
www.minespider.com